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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/790,063	KOHARA ET AL.
	Examiner	Art Unit
	Robert T. Crow	1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 19-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 19-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7 May 2007 has been entered.

Status of the Claims

2. This action is in response to papers filed 7 May 2007 in which claims 1-13 were amended, no claims were canceled, and new claims 19-22 were added. All of the amendments have been thoroughly reviewed and entered.

The previous rejections under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) not reiterated below are withdrawn in view of the amendments. Applicant's arguments have been thoroughly reviewed and are addressed following the rejections necessitated by the amendments.

Claims 1-13 and 19-22 are under prosecution.

Claim Interpretation

3. Claims 1-2, 3-9, 19, and 21 are drawn to a "system." The specification teaches a "system" wherein the "system" is defined in terms of **structural** limitations (e.g., page 3 and Figures 1A-D and 5A-B). In addition, claims 1-2, 3-9, 19, and 21 recite **structural** limitations of the "system." In addition, Figures 1A-D and 5A-B are each described on page 5 of the specification as being "based on one embodiment." Thus, the "system" is interpreted to encompass any collection of reagents and parts used together that are not necessarily part of a completely integrated single unitary apparatus rather than a method or process.

4. The preambles of claims 10-13, 20, and 22 each recite a "kit." The specification, however, does not define this term, and so it is being interpreted to encompass any collection of reagents and structures f the elements of the claims. Any further interpretation of the word is considered an "intended use" and does not impart any further structural limitation of on the claimed subject matter.

Claim Rejections - 35 USC § 112, First Paragraph

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-13 and 19-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. **This is a new matter rejection**. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-13 and 19-22 each recite the limitation "switch the application of the magnetic fields" the last line of independent claim 1 and in line 12 of independent claim 10. In addition, claims 7-9 and 21-22 recite "switching of the magnetic fields" in line 7 of claim 7, in line 6 of each of claims 8-9, and in the last line of each of claims 21-22. Page 11 of the specification describes a single embodiment wherein magnetic microparticles are fixes to specific positions of a vessel as a result of the turning off and on of a plurality of electromagnets. The specification does not, however, specifically teach the "switching" of magnetic fields, which encompasses alternate embodiments of the "switching" of a magnetic field; e.g., reversing the poles of magnets to switch the direction of the field. Therefore, the recitations "switch the application of the magnetic fields" and "switching of the magnetic fields" represent a broadening of the claimed invention, which is not supported by the specification and constitutes new matter.

Claim Rejections - 35 USC § 112, Second Paragraph

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-13 and 19-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-13 and 19-22 are indefinite in independent claims 1 and 10, each of which recites the limitation "the magnetic fields" in line 11 of claim 1 and in line 12 of claim 10. The recitation of "the magnetic fields" lacks antecedent basis in "a magnetic field" in line 10 of claim 1 and in line 11 of claim 10. In addition, the recitation makes the claims unclear if the plurality of magnetic members apply a plurality of independent magnetic fields that are independently switched. It is suggested that the claims be amended to recite <u>structural</u> limitations that describe the number of independent magnetic fields that are applied and to show proper antecedent basis.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 19, 2-4, 7-8, 21, 10, 20, 11-13, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Burd Mehta et al (PCT International Application Publication No WO 00/50172, published 31 August 2000).

Regarding claim 1, Burd Mehta et al teach a microparticle array analyzing system. In a single exemplary embodiment, Burd Mehta et al teach a vessel in the form of channel region 415 of a microfluidic device of Figure 3A (page 22, line 29-page 24, line 33). Burd Mehta et al also teach a capillary sips a sample form a microtiter plate and delivers the sample to the channel (page 16, lines 8-10); thus, the vessel is arranged to receive the sample. Burd Mehta et al teach a first magnetic particle set, which is a plurality of magnetic microparticles, creates a particle retention region for a second set (i.e., plurality) of non-magnetic particles in the channel (page 31, lines 7-19).

Burd Mehta et al further teach a plurality of magnet members disposed outside of the channel for magnetically controlling a relative position of the magnetic microparticles with respect to the vessel; namely, the microfluidic device incorporates a combination of magnetic control elements for modulating a magnetic field within the channel (page 18, lines 1-10). The **combination** of magnetic control elements is interpreted as a plurality of magnetic control elements. Burd Mehta et al further teach the magnetic members create a magnetic field proximal to the channel for magnetically controlling the position of the magnetic particles with respect to the vessel (page 22, line 29-page 23 line 10). Because Burd Mehta et al teach the magnetic field that is proximal to the channel is an **alternative embodiment** to a magnetic field **within** the particle retention region in the channel (page 23, lines 7-10), the magnetic control elements are interpreted as being outside the vessel.

Burn Mehta et al also teach the magnetic control elements modulate (i.e., switch) the magnetic filed to direct particle movement vessel (page 22, line 29-page 23 line 10); therefore, the plurality of magnetic control elements apply a magnetic field to each of the magnetic microparticles to move the microparticles within the vessel.

In addition, the courts have held that "while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function." *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). In addition, "[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-*

Packard Co. v. Bausch &Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original). Therefore, the various uses recited in claim 1 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 1. Because Burd Mehta et al teach the structural elements of claim 1, the claim is anticipated by Burd Mehta et al. See MPEP § 2114.

Regarding claim 19, Burd Mehta et al teach the system of claim 1, further comprising a plurality of non-magnetic particles held by the vessel, wherein the magnetic microparticles and the non-magnetic particles are arranged in a sequence within the vessel; namely, the plurality of magnetic microparticles creates a particle retention region for a second set (i.e., plurality) of non-magnetic particles in the channel (page 31, lines 7-19). Thus, the sets of particles are arranged in a sequence.

Regarding claim 2, Burd Mehta et al teach the system of claim 19, wherein the vessel holds first and second magnetic microparticles; namely, multiple sets of different particles are stacked (i.e., sandwiched) within the channel (page 29, lines 10-31), and that subsequent sets of particles are smaller magnetic particles (page 31, lines 7-19). Thus, the first layer of magnetic particles are the particle retention region of claim 1, which is followed by the layer of non-magnetic particles of claim 1, and the third layer is the set of smaller magnetic particles (page 31, lines 7-19). Burd Mehta further teach all of the types of particles are coupled (i.e., immobilized) to nucleic acids, and that particles serve many purposes within the array vessels (page 4,lines 5-22), which is interpreted as every type of particle bearing an immobilized probe in the forum of a coupled nucleic acid.

Regarding claim 3, Burd Mehta et al teach the system of claim 19, wherein at least one of the magnetic microparticles has a prove immobilized to a surface thereof; namely, Burd Mehta et al teach all of the types of particles, including magnetic particles, are coupled (i.e., immobilized) to nucleic acids (page 4, lines 5-22).

Regarding claim 4, Burd Mehta et al teach the system of claim 2, further comprising a detector and an analyzer in the form of a computer (Figure 12). Burd Mehta et al further teach the device comprising the computer detects and analyzes a bond between one of the probes and an organism related

molecule included in the sample; namely, the device detects a specific nucleic acid (page 13, lines 1-15), which is an organism related molecule.

As noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 4 (e.g.,.detecting a bond to an organism elated molecule) fail to define additional structural elements to the device. Because Burd Mehta et al teach the structural elements of claim 4, and the claim is anticipated by Burd Mehta et al.

Regarding claim 7, Burd Mehta et al teach the system of claim 19, wherein the vessel has branched channels; namely, Burd Mehta et al teach Figures 9A-B, which show channels 815-805 branching off of broad channel 915 (page 28, lines 1-9). Figures 9B also shows packets of mixed microparticles in each of the channels, wherein the packets are interpreted as the magnetic and non-magnetic microparticles.

As noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 7 (e.g., taking particles out of a channel) fail to define additional structural elements to the device. Burd Mehta et al teach the particles are stored in an integrated external storage element and fluidically transferred to the channel region (page 89, lines 5-24), and that the plurality of magnetic members create a magnetic field proximal to the channel for magnetically controlling the position of the magnetic particles with respect to the vessel (page 22, line 29-page 23 line 10). Thus, Burd Mehta et al teach the structural elements of claim 7, and the claim is anticipated by Burd Mehta et al.

Regarding claim 8, Burd Mehta et al teach the system of claim 19, further comprising a combination of magnetic and electrophoretic transport systems within the microfluidic device (page 15, line 30-page 17, line 8). The magnetic and non-magnetic particles are therefore taken out of an opening end of vessel 415 of Figure 3A and transported through an electrophoresis channel (page 17, lines 1-29), which is the transport mechanism connected to the electrophoresis apparatus. Burd Mehta et al also teach a capillary sips a sample form a microtiter plate and delivers the sample to the channel (page 16, lines 8-10); thus, the elements are all connected.

In addition, as noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 8 (e.g., collecting the microparticles) fail to define additional structural elements to the device. Burd Mehta et al teach the particles are stored in an integrated external storage element and fluidically transferred to the channel region (page 89, lines 5-24), and that the plurality of magnetic members create a magnetic field proximal to the channel for magnetically controlling the position of the magnetic particles with respect to the vessel (page 22, line 29-page 23 line 10). Thus, Burd Mehta et al teach the structural elements of claim 8, and the claim is anticipated by Burd Mehta et al.

Regarding claim 21, Burd Mehta et al teach the system of claim 1, further comprising a collecting vessel collecting one of the magnetic microparticles moved by the switching of the magnetic fields; namely, the arrays of particles are moved to a desired location within a microfluidic system (page 14, lines 5-11), wherein the system has a plurality of locations (Figure 8).

In addition, as noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 22 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 22. Because Burd Mehta et al teach the structural elements of claim 22, the claim is anticipated by Burd Mehta et al.

Regarding claim 10, Burd Mehta et al teach a microarray particle kit (page 96, lines 10-30). In a single exemplary embodiment, Burd Mehta et al teach a vessel in the form of channel region 415 of a microfluidic device of Figure 3A (page 22, line 29-page 24, line 33). Burd Mehta et al teach a first magnetic particle set, which is a plurality of magnetic microparticles, creates a particle retention region for a second set (i.e., plurality) of non-magnetic particles in the channel (page 31, lines 7-19).

Burd Mehta et al further teach a plurality of magnet members disposed outside of the channel for magnetically controlling a relative position of the magnetic microparticles with respect to the vessel; namely, the microfluidic device incorporates a combination of magnetic control elements for modulating a magnetic field within the channel (page 18, lines 1-10). The **combination** of magnetic control elements

is interpreted as a plurality of magnetic control elements. Burd Mehta et al further teach the magnetic members create a magnetic field proximal to the channel for magnetically controlling the position of the magnetic particles with respect to the vessel (page 22, line 29-page 23 line 10). Because Burd Mehta et al teach the magnetic field that is proximal to the channel is an **alternative embodiment** to a magnetic field **within** the particle retention region in the channel (page 23, lines 7-10), the magnetic control elements are interpreted as being outside the vessel.

Burd Mehta et al also teach at least one of the non-magnetic microparticles has a probe immobilized to a surface thereof; namely, Burd Mehta et al teach all of the types of particles, including non-magnetic particles, are coupled (i.e., immobilized) to nucleic acids (page 4, lines 5-22). Because the probe is on a particle and the particle is inside the vessel, the probe is immobilized to a position inside the vessel. The magnetic microparticles and the non-magnetic particles are arranged in a sequence within the vessel; namely, the plurality of magnetic microparticles creates a particle retention region for a second set (i.e., plurality) of non-magnetic particles in the channel (page 31, lines 7-19). Thus, the sets of particles are arranged in a sequence.

Burd Mehta et al also teach the magnetic control elements modulate (i.e., switch) the magnetic filed to direct particle movement vessel (page 22, line 29-page 23 line 10); therefore, the plurality of magnetic control elements apply a magnetic field to each of the magnetic microparticles to move the microparticles within the vessel.

In addition, as noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 10 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 1. Because Burd Mehta et al teach the structural elements of claim 10, the claim is anticipated by Burd Mehta et al.

Regarding claim 20, Burd Mehta et al teach the kit of claim 10, further comprising a plurality of non-magnetic particles held by the vessel, wherein the magnetic microparticles and the non-magnetic particles are arranged in a sequence within the vessel; namely, the plurality of magnetic microparticles

creates a particle retention region for a second set (i.e., plurality) of non-magnetic particles in the channel (page 31, lines 7-19).

Regarding claim 11, Burd Mehta et al teach the kit of claim 20, wherein at least one of the magnetic microparticles has a probe immobilized to a surface thereof; namely, Burd Mehta et al teach the non-magnetic particles are coupled (i.e., immobilized) to nucleic acids (page 4, lines 5-22).

Regarding claim 12, Burd Mehta et al teach the kit of claim 20, wherein at least one of the magnetic microparticles has a probe immobilized to a surface thereof; namely, Burd Mehta et al teach the magnetic particles, are coupled (i.e., immobilized) to nucleic acids (page 4, lines 5-22).

Regarding claim 13, Burd Mehta et al teach the kit of claim 20, wherein the vessel is a channel in a substrate (page 3, lines 17-25).

Regarding claim 22, Burd Mehta et al teach the kit of claim 10, further comprising a collecting vessel collecting one of the magnetic microparticles moved by the switching of the magnetic fields; namely, the arrays of particles are moved to a desired location within a microfluidic system (page 14, lines 5-11), wherein the system has a plurality of locations (Figure 8).

In addition, as noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various <u>uses</u> recited in claim 22 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 22. Because Burd Mehta et al teach the <u>structural</u> elements of claim 22, the claim is anticipated by Burd Mehta et al.

Response to Arguments

Applicant's arguments filed 7 May 2007 (i.e., the "Remarks") have been fully considered but they are not persuasive for the reason(s) listed below.

A. Applicant argues on pages 7-8 of the Remarks that Burd Mehta et al teaches neither a plurality of magnetic members disposed outside the vessel nor the way in which the particles are fixed.

However, as noted above, Burd Mehta et al teach the microfluidic system incorporates a combination of magnetic control elements for modulating a magnetic field within the channel (page 18, lines 1-10). The **combination** of magnetic control elements is interpreted as a plurality of magnetic control elements. Burd Mehta et al further teach the magnetic members create a magnetic field proximal to the channel for magnetically controlling the position of the magnetic particles with respect to the vessel (page 22, line 29-page 23 line 10). Because Burd Mehta et al teach the magnetic field that is proximal to the channel is an **alternative embodiment** to a magnetic field **within** the particle retention region in the channel (page 23, lines 7-10), the magnetic control elements are interpreted as being outside the vessel.

Burn Mehta et al also teach the magnetic control elements modulate (i.e., switch) the magnetic filed to direct particle movement vessel (page 22, line 29-page 23 line 10); therefore, the plurality of magnetic control elements apply a magnetic field to each of the magnetic microparticles to move the microparticles within the vessel.

In addition, as also noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 1 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 1. Because Burd Mehta et al teach the structural elements of the claims, the claims are anticipated by Burd Mehta et al.

B. Applicant further argues on page 8 of the Remarks that Burd Mehta et al do not teach a probe unmobilized to the at least one magnetic microparticle as required by claim 3. Applicant's term "unmobilized" is interpreted as "immobilized."

However, as noted above, Burd Mehta et al teach all of the types of particles, including magnetic particles, are coupled (i.e., immobilized) to nucleic acids (page 4, lines 5-22).

C. Applicant also argues on pages 8-9 of the Remarks that Burd Mehta et al does not teach taking out of a particle from a channel by switching a magnetic field as required by claims 7-8.

However, as noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 7-8 (e.g., taking particles out of a channel) fail to define

additional structural elements to the device. Burd Mehta et al teach the particles are stored in an integrated external storage element and fluidically transferred to the channel region (page 89, lines 5-24), and that the plurality of magnetic members create a magnetic field proximal to the channel for magnetically controlling the position of the magnetic particles with respect to the vessel (page 22, line 29-page 23 line 10). Burd Mehta et al also teach the arrays of particles are moved to a desired location within a microfluidic system (page 14, lines 5-11), wherein the system has a plurality of locations (Figure 8).Thus, Burd Mehta et al teach the <u>structural</u> elements of claims 7-8, and the claims are anticipated by Burd Mehta et al.

D. Applicant argues on page 9 of the Remarks that claim 12 is similarly distinguished, and that the previous Office Action appears to overlook the claim in rejecting claims 10-13 in bulk.

However, as noted on page 4 of the previous Office Action, Burd Mehta et al teach the particles have samples thereon (page 4, lines 5-22 of Burd Mehta). As defined by Burd Mehta et al (page 4, lines 5-22), the "particles" encompass both magnetic and non-magnetic particles; thus, the limitations of claim 12 were addressed in the previous Office Action.

In addition, as noted in the rejection of claim 12 above, Burd Mehta et al teach all of the particles, including magnetic particles, are coupled (i.e., immobilized) to nucleic acids (page 4, lines 5-22).

E. Applicant's arguments with respect to the rejection(s) of claim(s) as anticipated by Hauser et al under 35 USC 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made under 35 USC 103(a) in view of the teachings of Forrest et al as detailed below.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made

> to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 1, 19, and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burd Mehta et al (PCT International Application Publication No WO 00/50172, published 31 August 2000) in view of Southgate et al (U.S. Patent No. 5,863,502, issued 26 January 1999).

Regarding claims 5-6, Burd Mehta et al teach the microparticle array analyzing system of claim 1. In a single exemplary embodiment, Burd Mehta et al teach a vessel in the form of channel region 415 of a microfluidic device of Figure 3A (page 22, line 29-page 24, line 33). Burd Mehta et al also teach a capillary sips a sample form a microtiter plate and delivers the sample to the channel (page 16, lines 8-10); thus, the vessel is arranged to receive the sample. Burd Mehta et al teach a first magnetic particle set, which is a plurality of magnetic microparticles, creates a particle retention region for a second set (i.e., plurality) of non-magnetic particles in the channel (page 31, lines 7-19).

Burd Mehta et al further teach a plurality of magnet members disposed outside of the channel for magnetically controlling a relative position of the magnetic microparticles with respect to the vessel; namely, the microfluidic device incorporates a combination of magnetic control elements for modulating a magnetic field within the channel (page 18, lines 1-10). The <u>**combination**</u> of magnetic control elements is interpreted as a plurality of magnetic control elements. Burd Mehta et al further teach the magnetic

members create a magnetic field proximal to the channel for magnetically controlling the position of the magnetic particles with respect to the vessel (page 22, line 29-page 23 line 10). Because Burd Mehta et al teach the magnetic field that is proximal to the channel is an **alternative embodiment** to a magnetic field **within** the particle retention region in the channel (page 23, lines 7-10), the magnetic control elements are interpreted as being outside the vessel.

Burn Mehta et al also teach the magnetic control elements modulate (i.e., switch) the magnetic filed to direct particle movement vessel (page 22, line 29-page 23 line 10); therefore, the plurality of magnetic control elements apply a magnetic field to each of the magnetic microparticles to move the microparticles within the vessel.

As noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 1 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 1. Because the prior art teaches the structural elements of claim 1, the claim is obvious over the prior art.

Burd Mehta et al also teach the system of claim 19, further comprising a plurality of non-magnetic particles held by the vessel, wherein the magnetic microparticles and the non-magnetic particles are arranged in a sequence within the vessel; namely, the plurality of magnetic microparticles creates a particle retention region for a second set (i.e., plurality) of non-magnetic particles in the channel (page 31, lines 7-19). Thus, the sets of particles are arranged in a sequence.

While Burd Mehta et al also teach the magnets are electromagnets (page 20, lines 1-8), Burd Mehta et al do not explicitly teach the magnets are movable.

However, Southgate et al teach a system comprising fluidic channels (Abstract and Figure 16) having movable magnet 1100 outside a reaction chamber (i.e., channel) for moving magnetic beads and having the added advantage that the motility of the magnet allows the field gradient acting upon the beads to be maximized (column 25, line 49-column 26, line 16).

It would therefore have been obvious to a person or ordinary skill in the art at the time the claimed invention was made to have modified the system comprising movement of magnetic fields generated by a plurality of electromagnets as taught by Burd Mehta et al with movable electromagnets as taught by Southgate et al with a reasonable expectation of success. The modification would result in a plurality of movable electromagnets. The teachings of Southgate et al are evidence that movable electromagnets were known in the art at the time the claimed invention was made. The ordinary artisan would have been motivated to make such a modification because said modification would have resulted in allowing the field gradient acting upon the beads to be maximized as explicitly taught by Southgate et al (column 25, line 49-column 26, line 16).

14. Claims 1, 19, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burd Mehta et al (PCT International Application Publication No WO 00/50172, published 31 August 2000) in view of Harrison et al (U.S. Patent No. 6,432,290 B1, issued 13 August 2002).

Regarding claim 9, Burd Mehta et al teach the microparticle array analyzing system of claim 1. In a single exemplary embodiment, Burd Mehta et al teach a vessel in the form of channel region 415 of a microfluidic device of Figure 3A (page 22, line 29-page 24, line 33). Burd Mehta et al also teach a capillary sips a sample form a microtiter plate and delivers the sample to the channel (page 16, lines 8-10); thus, the vessel is arranged to receive the sample. Burd Mehta et al teach a first magnetic particle set, which is a plurality of magnetic microparticles, creates a particle retention region for a second set (i.e., plurality) of non-magnetic particles in the channel (page 31, lines 7-19).

Burd Mehta et al further teach a plurality of magnet members disposed outside of the channel for magnetically controlling a relative position of the magnetic microparticles with respect to the vessel; namely, the microfluidic device incorporates a combination of magnetic control elements for modulating a magnetic field within the channel (page 18, lines 1-10). The **combination** of magnetic control elements is interpreted as a plurality of magnetic control elements. Burd Mehta et al further teach the magnetic

members create a magnetic field proximal to the channel for magnetically controlling the position of the magnetic particles with respect to the vessel (page 22, line 29-page 23 line 10). Because Burd Mehta et al teach the magnetic field that is proximal to the channel is an **alternative embodiment** to a magnetic field **within** the particle retention region in the channel (page 23, lines 7-10), the magnetic control elements are interpreted as being outside the vessel.

Burn Mehta et al also teach the magnetic control elements modulate (i.e., switch) the magnetic filed to direct particle movement vessel (page 22, line 29-page 23 line 10); therefore, the plurality of magnetic control elements apply a magnetic field to each of the magnetic microparticles to move the microparticles within the vessel.

As noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 1 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 1. Because the prior art teaches the structural elements of claim 1, the claim is obvious over the prior art.

Burd Mehta et al also teach the system of claim 19, further comprising a plurality of non-magnetic particles held by the vessel, wherein the magnetic microparticles and the non-magnetic particles are arranged in a sequence within the vessel; namely, the plurality of magnetic microparticles creates a particle retention region for a second set (i.e., plurality) of non-magnetic particles in the channel (page 31, lines 7-19). Thus, the sets of particles are arranged in a sequence.

While Burd Mehta et al also teach downstream detection is performed by mass spectrometry (page 55, lines 1-13), Burd Mehta et al do not explicitly teach the mass spectroscope is connected to the transport mechanism; i.e., fluidically integrated with the device.

However, Harrison et al teach a vessel comprising channels (Figure 10) and having a transport mechanism for collecting the microparticles from an opening end of the vessel; namely, microparticles in the form of beads (Abstract) are fluidically pumped through an electrospray coupler to a mass spectrometer (Figure 10 and column 18, lines 7-25)) with the added advantage that an integrated system

eliminated sample handling losses and contamination problems arising from off-device (i.e., off-chip) sample manipulation (column 4, lines 25-35).

It would therefore have been obvious to a person or ordinary skill in the art at the time the claimed invention was made to have modified the system comprising transport of microparticles and mass spectrometry as taught by Burd Mehta et al with the fluidic integration of the device as taught by Harrison et al with a reasonable expectation of success. The teachings of Harrison et al are evidence that fluidic coupling of a mass spectroscope to a microparticle array analyzing system was commonly known in the art at the time the claimed invention was made. The ordinary artisan would have been motivated to make such a modification because said modification would have resulted in a system having the added advantage of eliminating sample handling losses and contamination problems arising from off-device as explicitly taught by Harrison et al (column 4, lines 25-35).

15. Claims 1, 19, 2-6, 8, 10, 20, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauser et al (PCT International Application Publication No. WO 99/60170, published 25 November 1999) in view of Forrest et al (U.S. Patent No. 4,141,687, issued 27 February 1979).

Regarding claim 1, Hauser et al teach a microparticle array analyzing system. In a single exemplary embodiment, Hauser et al teach Figure 1, which shows a vessel in the form of tube 12 containing a linear array of beads 18 and 20 (page 9, lines 10-26). The vessel 12 accepts solutions of target analytes, which is a sample (page 9, lines 10-26). Hauser et al also teach a plurality of magnetic microparticles in the form of magnetic beads placed at the ends of the linear array (page 19, lines 1-5).

Hauser et al also teach a single magnet member in the form of a hand magnet is disposed outside of the vessel for magnetically controlling the relative positions of the particles in the vessel (page 19, lines 1-5).

It is noted that the specification provides no limiting definition of what is encompassed by the term "switch." Thus, because the hand magnet of Hauser oscillated the magnetic field (page 19, lines 1-

5), the hand magnet is interpreted as "switching" the application of the magnetic field to move the magnetic microparticles. Thus, the claim has been given the broadest reasonable interpretation consistent with the specification (*In re Hyatt*, 211 F.3d1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000) (see MPEP 2111 [R-1]).

Hauser et al do not teach a plurality of magnet members.

However, Forrest et al teach a system in the form of a magnetic separation apparatus (Abstract) comprising a vessel in the form of conduit 56 having a plurality of magnet members 60 and 62 disposed outside of the vessel (Figure 2A and column 9, lines 9-34). The magnet members are electromagnets (column 3, lines 35-49). Forrest et al also teach the plurality of magnets have the added advantage of allowing a double washing of trapped magnetic particles to remove excess label, thereby minimizing incorrect assay results (column 3, lines 27-65).

As noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 1 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 1. Because the prior art teaches electromagnets, which are switched on and off to switch the application of magnetic fields, the prior art teaches the structural elements of claim 1, the claim is obvious over the prior art.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the system comprising magnet members of Hauser et al with the plurality of magnet members of Forrest et al with reasonable expectation of success. The teachings of Forrest et al are evidence that a plurality of magnet members was commonly known in the art at the time the claimed invention was made. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in a system having the added advantage of allowing a double washing of trapped magnetic particles to remove excess label, thereby minimizing incorrect assay results as explicitly taught by Forrest et al (column 3, lines 27-65).

Regarding claim 19, the system of claim 1 is discussed above. Hauser et al also teach a plurality of are glass beads (page 13, lines 19-30), which are non-magnetic microparticles. The microparticles are arranged in a given sequence because the glass microparticles are in between the terminal magnetic microparticles.

Regarding claim 2, the system of claim 19 is discussed above. Hauser et al also teach the system of claim 1, wherein the vessel holds first and second magnetic microparticles; namely, the terminal magnetic microparticles at both ends of the array (page 19, lines 1-5). Hauser et al also teach each of the non-magnetic microparticles have probe 22 attached (page 9, lines 10-26). Because the magnetic microparticles are at the termini, the non-magnetic microparticles are sandwiched between the first and second magnetic microparticles.

Regarding claim 3, the system of claim 19 is discussed above. Forrest et al also teach the magnetic particle has a probe in the form of a reaction product of an assay immobilized to a surface thereof (Abstract). Forrest et al also teach probes immobilized on magnetic particles have the added advantage of selective removal of probes on magnetic particles so that the amount of a reaction product between the probe and an analyte is determined (column 1, lines 29-54).

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the system comprising magnet members of Hauser et al in view of Forrest et al with the probes on the magnetic particles of Forrest et al with reasonable expectation of success. The teachings of Forrest et al are evidence that probes on the magnetic particles were commonly known in the art at the time the claimed invention was made. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in a system having the added advantage of allowing determination of the amount of a reaction product between the probe and an analyte as a result of the selective removal of probes on magnetic particles as explicitly taught by Forrest et al (column 1, lines 29-54).

Regarding claim 4, the system of claim 19 is discussed above. Hauser et al also teach the system further comprises a detector for detecting a bond between one of the probes and an organism-related molecule included in the sample; namely, a CCD device (page 21, lines 6-28). Hauser et al also teach an analyzer in the form of a computer for overlapping sequence data obtained from scanning of the image array (page 36, lines 1-7). The scanned data is obtained from the CD; therefore, the analyzer analyzes results of detection by the detector.

As noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 4 (e.g., detecting a bond to an organism elated molecule) fail to define additional structural elements to the device. Because the prior art teaches the structural elements of claim 4, and the claim is obvious over the prior art.

Regarding claim 5, the system of claim 19 is discussed above. Forrest et al teach the plurality of magnetic members are movably provided outside the vessel; namely, in an alternate embodiment, the magnets are movable permanent magnets which vary (i.e., switch) the magnetic fields (column 3, lines 35-49). Forrest et al also teach the movable magnets have the added advantage of allowing the magnetic field to be varied between a minimum and a maximum so that the magnetic fields (i.e., traps) are readily deactuated and actuated (column 3, lines 35-49).

As noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 5 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 1. Because the prior art teaches movable magnets that switch the application of magnetic fields by movement towards or away from the vessel, the prior art teaches the structural elements of claim 5, the claim is obvious over the prior art.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the system comprising magnet members of Hauser et al in view of Forrest with the plurality of movably provided magnet members of Forrest et al with reasonable expectation of success. The teachings of Forrest et al are evidence that a plurality of movably provided

magnet members was commonly known in the art at the time the claimed invention was made. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in a system having the added advantage of allowing readily deactuated and actuated magnetic fields as explicitly taught by Forrest et al (column 3, lines 35-49).

Regarding claim 6, the system of claim 19 is discussed above. Forrest et al teach the plurality of magnetic members are electromagnets (column 3, line 65-column 4, line 3). The electromagnets move the magnetic microparticles by varying the magnetic field to capture and dissociate the particles within the vessel; namely, the magnets trap the particles upon application of a magnetic field (column 3, lines 35-49). Forrest et al also teach the electromagnets have the added advantage of allowing removal of any residual magnetic field, thereby preventing clogging within the system (column 3, lines 35-49).

As noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 6 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 1. Because the prior art teaches electromagnets, which are switched on and off to switch the application of magnetic fields, the prior art teaches the structural elements of claim 6, the claim is obvious over the prior art.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the system comprising magnet members of Hauser et al in view of Forrest with the plurality of electromagnet members of Forrest et al with reasonable expectation of success. The teachings of Forrest et al are evidence that a plurality of electromagnet members was commonly known in the art at the time the claimed invention was made. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in a system having the added advantage of allowing removal of any residual magnetic field, thereby preventing clogging within the system as explicitly taught by Forrest et al (column 3, lines 35-49).

Regarding claim 8, the system of claim 19 is discussed above. Hauser et al also teach the system further comprises a transport mechanism; namely, a pressurized airflow pump (page 22, lines 26-30) and

that beads are removed from the linear array through an opening end of the vessel (page 23, lines 1-13). Hauser et al also teach that an electrophoresis apparatus is connected to the transport mechanism; namely, the device has electrophoretic and mechanical pumps (page 20, lines 13-15).

Regarding claim 10, Hauser et al teach a microparticle array kit. In a single exemplary embodiment, Hauser et al teach Figure 1, which shows a vessel in the form of tube 12 containing a linear array of beads 18 and 20 (page 9, lines 10-26). The vessel 12 accepts solutions of target analytes, which is a sample (page 9, lines 10-26). Hauser et al also teach a plurality of magnetic microparticles in the form of magnetic beads placed at the ends of the linear array (page 19, lines 1-5). Hauser et al also teach probes 22 attached to each of the non-magnetic microparticles (page 9, lines 10-26), which is a position inside the vessel. Because the magnetic microparticles are at the termini, the non-magnetic microparticles are sandwiched between the first and second magnetic microparticles.

Hauser et al also teach a single magnet member in the form of a hand magnet is disposed outside of the vessel for magnetically controlling the relative positions of the particles in the vessel (page 19, lines 1-5).

It is noted that the specification provides no limiting definition of what is encompassed by the term "switch." Thus, because the hand magnet of Hauser oscillated the magnetic field (page 19, lines 1-5), the hand magnet is interpreted as "switching" the application of the magnetic field to move the magnetic microparticles. Thus, the claim has been given the broadest reasonable interpretation consistent with the specification (*In re Hyatt*, 211 F.3d1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000) (see MPEP 2111 [R-1]).

Hauser et al do not teach a plurality of magnet members.

However, Forrest et al teach a system in the form of a magnetic separation apparatus (Abstract) comprising a vessel in the form of conduit 56 having a plurality of magnet members 60 and 62 disposed outside of the vessel (Figure 2A and column 9, lines 9-34). The magnet members are electromagnets (column 3, lines 35-49). Forrest et al also teach the plurality of magnets have the added advantage of

allowing a double washing of trapped magnetic particles to remove excess label, thereby minimizing incorrect assay results (column 3, lines 27-65).

As noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 10 (e.g., switching the application of magnetic fields) fails to define additional structural elements to the device of claim 1. Because the prior art teaches electromagnets, which are switched on and off to switch the application of magnetic fields, the prior art teaches the structural elements of claim 10, the claim is obvious over the prior art.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the system comprising magnet members of Hauser et al with the plurality of magnet members of Forrest et al with reasonable expectation of success. The teachings of Forrest et al are evidence that a plurality of magnet members was commonly known in the art at the time the claimed invention was made. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in a system having the added advantage of allowing a double washing of trapped magnetic particles to remove excess label, thereby minimizing incorrect assay results as explicitly taught by Forrest et al (column 3, lines 27-65).

Regarding claim 20, the kit of claim 10 is discussed above. Hauser et al also teach a plurality of non magnetic particles in the form of array of non-magnetic beads (page 9, lines 10-26 and Figure 1).

Regarding claim 11, the kit of claim 20 is discussed above. Hauser et al also teach probes 22 attached to each of the non-magnetic microparticles (page 9, lines 10-26).

Regarding claim 12, the system of claim 20 is discussed above. Forrest et al also teach the magnetic particle has a probe in the form of a reaction product of an assay immobilized to a surface thereof (Abstract). Forrest et al also teach probes immobilized on magnetic particles have the added advantage of selective removal of probes on magnetic particles so that the amount of a reaction product between the probe and an analyte is determined (column 1, lines 29-54).

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the system comprising magnet members of Hauser et al in view of Forrest et al with the probes on the magnetic particles of Forrest et al with reasonable expectation of success. The teachings of Forrest et al are evidence that probes on the magnetic particles were commonly known in the art at the time the claimed invention was made. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in a system having the added advantage of allowing determination of the amount of a reaction product between the probe and an analyte as a result of the selective removal of probes on magnetic particles as explicitly taught by Forrest et al (column 1, lines 29-54).

Regarding claim 13, the kit of claim 20 is discussed above. Hauser et al also teach the vessel is a channel in a capillary; namely, the microparticles are contained within a capillary tube (page 6, lines 28-31).

16. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hauser et al (PCT International Application Publication No. WO 99/60170, published 25 November 1999) in view of Forrest et al (U.S. Patent No. 4,141,687, issued 27 February 1979) as applied to claims 1 and 19 above, and further in view of Burd Mehta et al (PCT International Application Publication No WO 00/50172, published 31 August 2000).

Regarding claim 7, the system of claims 1 and 19 is discussed above in Section 15.

Neither Hauser et al nor Forrest et al teach branched channels comprising each of magnetic and non-magnetic particles.

However, Burd Mehta et al teach a vessel having branched channels; namely, Burd Mehta et al teach Figure 8, which show channels 810-825 branching off of broad channel 885 (page 27, lines 15-32). Burd Mehta et al also teach packets of microparticles are directed into each of the channels (page 27, lines 15-32). The packets are interpreted as the magnetic and non-magnetic microparticles (page 31, lines 7-19),

and the directing of the particles is by magnetic members (page 22, line 29-page 23 line 10). Burd Mehta et al also teach the branched channels comprising each of magnetic and non-magnetic particles has the added advantage of allowing parallel access to sample and fluidic reagents (page 27, lines 15-32), which allows increased rates of nucleic acid sequencing at lower cost (page 2, lines 9-19).

As noted above, apparatus claims cover what a device *is*, not what a device *does*. Therefore, the various uses recited in claim 7 (e.g., taking particles out of a channel) fail to define additional structural elements to the device. Because the prior art teaches electromagnets, which are switched on and off to switch the application of magnetic fields, the prior art teaches the structural elements of claim 7, and the claim is obvious over the prior art.

It would therefore have been obvious to a person or ordinary skill in the art at the time the claimed invention was made to have modified the system comprising transport of microparticles as taught by Hauser et al in view of Forrest et al with the branched channels comprising each of magnetic and non-magnetic particles as taught by Burd Mehta et al with a reasonable expectation of success. The teachings of Burd Mehta et al are evidence that branched channels comprising each of magnetic and non-magnetic particles were commonly known in the art at the time the claimed invention was made. The ordinary artisan would have been motivated to make such a modification because said modification would have resulted in a system having the added advantage of increased rates of nucleic acid sequencing at lower cost as a result of allowing parallel access to sample and fluidic reagents as explicitly taught by Burd Mehta et al (page 2, lines 9-19 and page 27, lines 15-32).

17. Claims 9 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauser et al (PCT International Application Publication No. WO 99/60170, published 25 November 1999) in view of Forrest et al (U.S. Patent No. 4,141,687, issued 27 February 1979) as applied to claims 1, 10, and 19 above, and further in view of Harrison et al (U.S. Patent No. 6,432,290 B1, issued 13 August 2002).

Regarding claims 9 and 21-22, the system of claims 1 and 19 and kit of claim 10 are discussed above in Section 15.

While Hauser et al also teach detection is performed by mass spectrometry (page 34, lines 15-26), neither Hauser et al nor Forrest et al explicitly teach the mass spectroscope is connected to the transport mechanism; i.e., fluidically integrated with the device.

However, Harrison et al teach a vessel comprising channels (Figure 10) and having a transport mechanism for collecting the microparticles from an opening end of the vessel; namely, microparticles in the form of beads (Abstract) are fluidically pumped through electrospray coupler 41 to a mass spectrometer (Figure 10 and column 18, lines 7-25). The electrospray coupler is collecting vessel for collecting one of the microparticles (i.e., claims 21-22). Harrison et al also teach the collecting vessel, which fluidically integrates the mass spectroscope with the transport mechanism, has the added advantage of eliminating sample handling losses and contamination problems arising from off-device (i.e., off-chip) sample manipulation (column 4, lines 25-35).

It would therefore have been obvious to a person or ordinary skill in the art at the time the claimed invention was made to have modified the system comprising transport of microparticles and mass spectrometry as taught by Hauser et al in view of Forrest et al with the fluidic integration of the device as taught by Harrison et al with a reasonable expectation of success. The teachings of Harrison et al are evidence that fluidic coupling of a collecting vessel and mass spectroscope to a microparticle array analyzing system was commonly known in the art at the time the claimed invention was made. The ordinary artisan would have been motivated to make such a modification because said modification would have resulted in a system having the added advantage of eliminating sample handling losses and contamination problems arising from off-device sample manipulation as explicitly taught by Harrison et al (column 4, lines 25-35).

Response to Arguments

Applicant's remaining arguments on page 10 of the Remarks rely on arguments set forth to address the rejections of the claims as anticipated by Burd Mehta et al under 35 USC 102(b). These arguments are addressed above in Section 10. Since the arguments regarding the teachings of Burd Mehta et al were not persuasive, the remaining rejections of the claims are maintained.

Conclusion

18. No claim is allowed.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert T. Crow whose telephone number is (571) 272-1113. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jehanne Sitton
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PRIMARY EXAMINER
7/12/07

Robert T. Crow
Examiner
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